

Appendix 1C

Explanation of Bentonite Blanket to Line Ponds Proposed for Use in Settling Ponds in Areas of Concern

Explanation of Bentonite Blanket to Line Ponds Proposed for Use in Settling Ponds in Areas of Concern

The following Forest Service Water Resource Protection Measure (WRPM) would be required for those Plans of Operation that have settling ponds with the potential for a discharge of sediment to the creek via subsurface flow through old placer tailings. Each site would have adjustments made to the location of the blanket based on expected flow paths and orientation of the pond to the stream and the flow paths.

This WRPM is designed to eliminate the potential for sediment to move through the placer tailings via subsurface flow and reach the stream. The WRPM still allows water to 1) move into the pond, 2) flow through the bottom of the pond, 3) flow through the upper 2 feet of the ponds sides during the winter and spring elevated water levels in the ponds.

The figures below demonstrate the WRPM.

Two possible scenarios:

Scenario 1: The pond bed is covered with fine sediment and some form of vegetation. Therefore, if sediment is discharge into the pond it will move through the sides of the pond towards the creek, not vertically down through the pond bottom.

Scenario 2: Similar as Scenario 1 except no sediment has settled on the bottom of the pond. In this case would put a bentonite blanket along the bottom as well, but still only partly wrapped along the sides.

Forest Service Water Resource Protection Measure for example below:

Bentonite blanket will be placed along the stream side, downstream side of the pond , and a little of the hillslope side of the pond that would start at the pond bottom and go within 2 feet of the top of the pond. Blanket will be draped 2-3 feet on the bottom of the pond and 3 feet on either side of the pond. Pond levels will remain one foot below the top of the bentonite blanket when being used as a settling pond

Figure 1C-1: Aerial of site used as example of to discuss use of bentonite blanket to prevent the potential for a discharge of sediment via subsurface flow through tailings to the creek.

WHITE arrows: likely direction of groundwater flow through the old placer tailings and through the pond proposed for use as a settling pond.



Figure 1C-2: Cross-section through a pond showing the location of the bentonite blanket and expected subsurface flow directions.

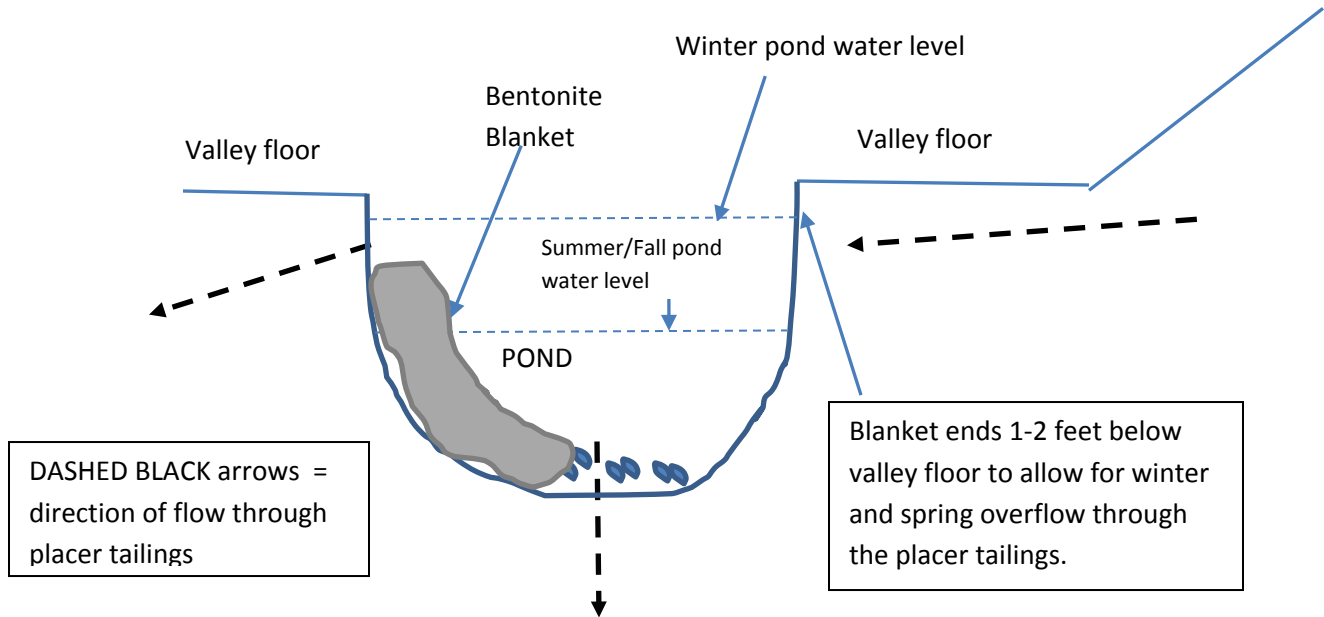


Figure 1C-3: Pre bentonite Blanket installation. Flow moves in and out of pond through the pond bottom and sides with the potential to carry sediment unimpeded to the creek.

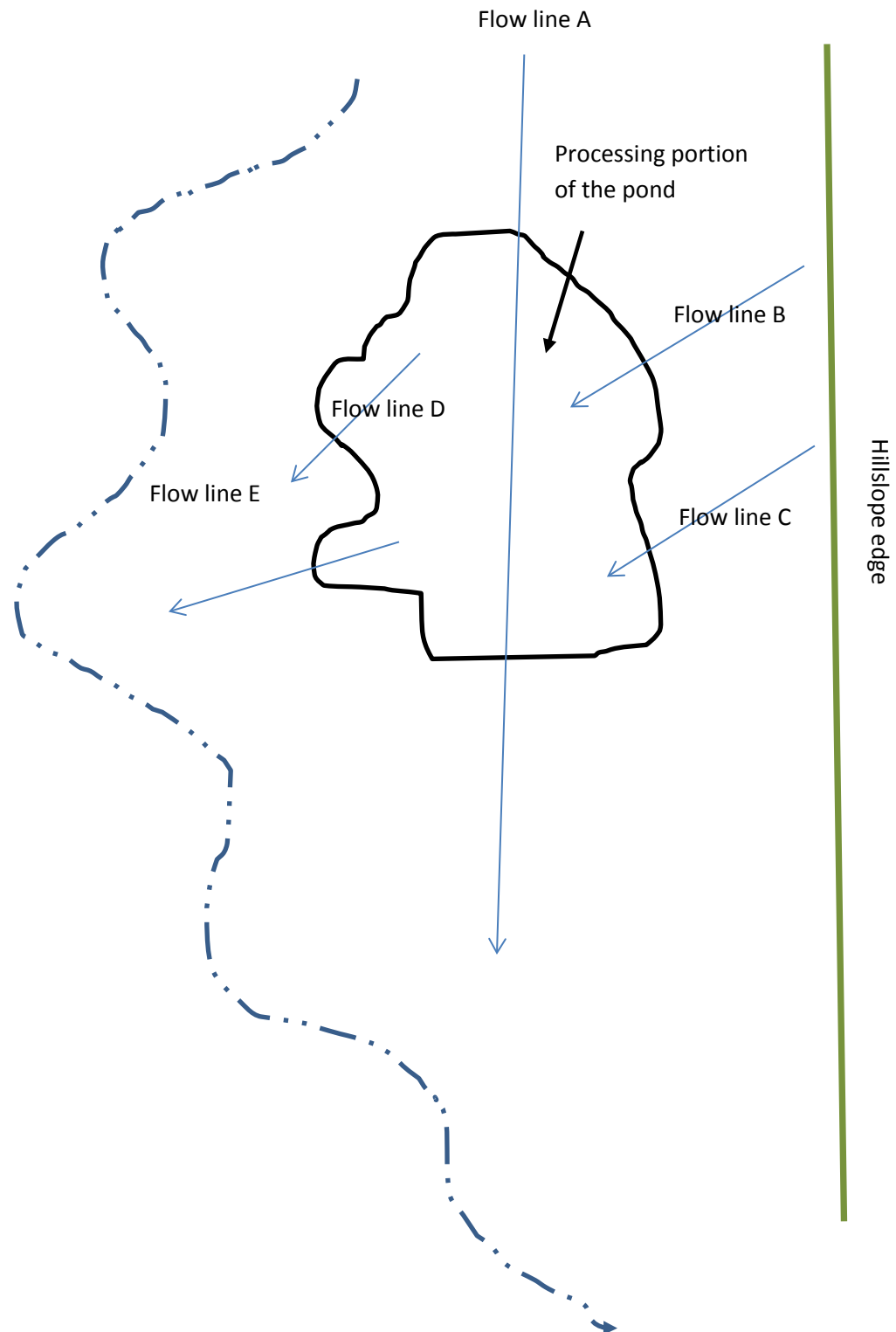


Figure 1C-4: Bentonite Blanket (gray) installed. Flow line A moves into pond but only minor water leaves as it moves through the blanket as A' (dashed). Same was with Flow line E (dashed)

